

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following remarks is respectfully requested.

Claims 2, 4-6, 8, and 10-11 are pending in the present application.

In the outstanding Office Action Claims 2, 4, 8, and 10 were rejected under 35 U.S.C. § 103(a) as unpatentable over Gilbert et al. (U.S. Patent No. 6,016,311, hereinafter "Gilbert") in view of Inata (U.S. Patent No. 5,910,953); Claims 5 and 11 were rejected under 35 U.S.C. § 103(a) as unpatentable over Gilbert and Inata in view of Baden et al. (U.S. Patent No. 6,353,598, hereinafter "Baden"); and Claims 6 and 12 were rejected under 35 U.S.C. § 103(a) as unpatentable over Gilbert and Inata in view of Yun (U.S. Patent No. 6,463,295).

Initially, Applicants note the IDS filed on June 15, 2005, has not been acknowledged as considered. Applicants respectfully request acknowledgement of consideration of the references in that IDS by providing Applicants with an initialed form PTO-1449 from that IDS. For convenience, copies of the IDS filed June 15, 2005, and the corresponding Official Filing Receipt are submitted herein.

In response to the rejection of Claims 2, 4, 8, and 10 under 35 U.S.C. § 103(a) as unpatentable over Gilbert in view of Inata, Applicants respectfully traverse this rejection. Independent Claim 2 recites:

A method of allocating radio resources, in a base station, to the base station and a mobile station, comprising the steps of:

obtaining a ratio between traffic of an uplink and traffic of a downlink;

allocating the radio resources to the uplink and downlink for the mobile station according to the obtained ratio; and

dividing time into a plurality of time periods corresponding to at least one of days of a week and hours of a day, and allocating empirical data regarding traffic of the uplink and traffic of the downlink to the respective time

periods, wherein said step of obtaining a ratio obtains the ratio based on the empirical data corresponding to a present time period and a current ratio between traffic of the uplink and traffic of the downlink based on current traffic.

Independent Claim 8 recites similar features in alternate statutory form.

By way of background, communication systems have uplink and downlink traffic. Different services require different data capacities to be transferred on the uplink or downlink. Past methods of allocating radio resources on the uplink or downlink included FDD (Frequency Division Duplex) where bands of an uplink and downlink are fixed to an identical bandwidth, so that the uplink traffic and downlink traffic cannot be made symmetrical.¹ For time division duplex (TDD) systems the technique used was to change the boundaries of uplink slots and downlink slots in response to a ratio between the uplink traffic and the downlink traffic that are generated at a particular instant.² The TDD technique lacks stability and ends up providing a reduction in efficiency if it cannot closely follow the traffic changes.³

In light of at least the above deficiency in the art, the present invention is provided. The present invention provides for an efficient, flexible, and stable method and apparatus for allocating radio resources on the uplink and downlink.⁴

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the

¹ Specification, page 2, line 33 to page 3, line 3.

² Specification, page 3, lines 3-8.

³ Specification, page 3, lines 8-11.

⁴ Specification, page 2, line 22 to page 3, line 27.

reasonable expectation of success must both be found in the prior art and not based on Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).⁵

The outstanding Office Action admits at page 4 that Gilbert fails to disclose time periods corresponding to at least one of days of a week and hours of a day, as described in Claim 2. The outstanding Office Action asserts that Inata teaches this feature. However, there is no reasonable expectation of success when combining Gilbert with Inata because Inata is inoperable when combined with Gilbert.

Gilbert teaches incorporating present data into past data successively so as to accumulate moment data along the time axis to obtain bandwidth utilization parameters.⁶ In the computation of moments as taught by Gilbert, the computation to generate data for the next moment from past data and current data is a process that is recursively performed.⁷ Namely, the data generated for the next moment will be used as the past data when the computation for the further next moment is performed. Such a computation process is not consistent with the use of a time-zone-specific traffic characteristic as taught by Inata.

Inata teaches specifying data indicative of the number of time slots required for each day of a week or each time zone.⁸ If data for each day or each time zone of Inata is used as the past data (empirical data) in the computation as taught by Gilbert, the following problem arises. When a point in time shifts from Monday, 12:00 midnight to Tuesday, 1:00 AM, for example, the empirical data (data of Monday) and the current data (e.g., data of 12:00 midnight) are used to generate data for the next moment (Tuesday, 1:00 AM). As this computation is recursively performed thereafter, the data of Monday will be successively incorporated into successive data for Tuesday (i.e., data for Tuesday, 2:00 AM, data for

⁵ See M.P.E.P. § 2143-2143.03.

⁶ Gilbert, col. 8, lines 3-11, "[O]nce the average bandwidth requirement is determined, the time slot allocation can be established[.]"

⁷ Gilbert, col. 8, lines 20-34, "The information gathered by the communication system can be used to re-examine, from time to time, the ratio of the uplink and downlink timeslots."

⁸ Inata, col. 5, lines 4-16.

Tuesday, 3:00 AM, and so on). This serves to smooth out traffic characteristics over time, and thus undermines the intended operation of Inata that is aimed at taking into account the time-zone-specific traffic characteristics, which differ from time zone to time zone.

Accordingly, there is no reasonable expectation of success when combining Gilbert and Inata because Inata is inoperable when combined with Gilbert.

It is therefore respectfully requested that the outstanding rejection of Claims 2, 4, 8, and 10 under 35 U.S.C. § 103(a) as unpatentable over Gilbert in view of Inata be withdrawn.

In response to the rejection of Claims 5 and 11 under 35 U.S.C. § 103(a) as unpatentable over Gilbert and Inata in view of Baden, Applicants respectfully traverse this rejection. As discussed above, independent Claims 2 and 8 and claims dependent therefrom are believed to be allowable. Claims 5 and 11 depend from Claims 2 and 8, respectively. Baden does not supply the feature identified as deficient in Gilbert. Nor does Baden provide a reasonable expectation of success when combining Gilbert and Inata. Accordingly, the grounds for rejection are believed to have been overcome.

Therefore, it is respectfully requested that the rejection of Claims 5 and 11 under 35 U.S.C. § 103(a) as unpatentable over Gilbert and Inata in view of Baden be withdrawn.

In response to the rejection of Claims 6 and 12 under 35 U.S.C. § 103(a) as unpatentable over Gilbert and Inata in view of Yun, Applicants respectfully traverse this rejection. As discussed above, independent Claims 2 and 8 and claims dependent therefrom are believed to be allowable. Claims 6 and 12 depend from Claims 2 and 8, respectively. Yun does not provide the feature identified as deficient in Gilbert. Nor does Yun provide a reasonable expectation of success when combining Gilbert and Inata. Accordingly, the grounds for rejection are believed to have been overcome.

Therefore, it is respectfully requested that the rejection of Claims 6 and 12 under 35 U.S.C. § 103(a) as unpatentable over Gilbert and Inata in view of Yun be withdrawn.

Consequently, in view of the foregoing discussion it is respectfully submitted that this application is in condition for allowance. An early and favorable action is therefore respectfully requested.

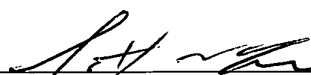
Respectfully submitted,

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OSMM&N File No. 214470US90

Serial No. 09/966,087

In the matter of the Application of: Lan CHEN, et al.

For: EFFICIENT AND STABLE RADIO RESOURCE ALLOCATION

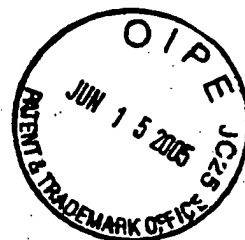
Dept.: IP-I

By: BDL/phh

Due Date: 06/15/2005

The following has been received in the U.S. Patent Office on the date stamped hereon:

- Dep. Acct. Order Form
- Information Disclosure Statement
- Cited References (4)
- JAPANESE Office Action
- PTO-1449



Docket No. 214470US90/phh



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF: Lan CHEN, et al.

SERIAL NO: 09/966,087

GAU: 2683

FILED: October 1, 2001

EXAMINER: James D. EWART

FOR: EFFICIENT AND STABLE RADIO RESOURCE ALLOCATION

INFORMATION DISCLOSURE STATEMENT UNDER 37 CFR 1.97

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Applicant(s) wish to disclose the following information.

REFERENCES

- ☒ The applicant(s) wish to make of record the references, some of which are cited in the attached Japanese Office Action and listed on the attached form PTO-1449. Copies of the listed references are attached, where required, as are either statements of relevancy or any readily available English translations of pertinent portions of any non-English language references.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

RELATED CASES

- ☐ Attached is a list of applicant's pending application(s), published application(s) or issued patent(s) which may be related to the present application. In accordance with the waiver of 37 CFR 1.98 dated September 21, 2004, copies of the cited pending applications are not provided. Cited published and/or issued patents, if any, are listed on the attached PTO form 1449.
- ☐ A check or credit card payment form is attached in the amount required under 37 CFR §1.17(p).

CERTIFICATION

- ☒ Each item of information contained in this information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this statement.
- ☐ No item of information contained in this information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned, having made reasonable inquiry, was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this statement.

DEPOSIT ACCOUNT

- ☒ Please charge any additional fees for the papers being filed herewith and for which no check or credit card payment is enclosed herewith, or credit any overpayment to deposit account number 15-0030. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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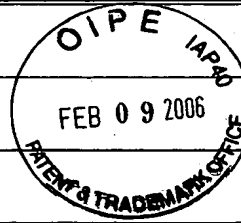
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SHEET 1 OF 1

Form PTO 1449
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PATENT AND TRADEMARK OFFICEATTY DOCKET NO.
214470US90SERIAL NO.
09/966,087

LIST OF REFERENCES CITED BY APPLICANT

APPLICANT
Lan CHEN, et al.FILING DATE
October 1, 2001GROUP
2683

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUB CLASS	FILING DATE IF APPROPRIATE
	AA	6,741,579 B1	05/25/2004	Jin Ho CHOI, et al.			
	AB	6,611,509 B1	08/26/2003	Masaki HAYASHI, et al.			
	AC						
	AD						
	AE						
	AF						
	AG						
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	AI						
	AJ						
	AK						
	AL						
	AM						
	AN						

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	TRANSLATION	
					YES	NO
	AO	7-297829	11/10/1995	JAPAN (with English Abstract)		X
	AP	7-107546	04/21/1995	JAPAN (with English Abstract)		X
	AQ	11-285059	10/15/1999	JAPAN (with corr. US 6,741,579 B1)		X
	AR	11-261544	09/24/1999	JAPAN (with corr. US 6,611,509 B1)		X
	AS					
	AT					
	AU					
	AV					

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, etc.)

	AW	
	AX	
	AY	
	AZ	

☐ Additional References sheet(s) attached

Examiner

Date Considered

*Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.